

MATERIALS FOR A FLORA OF TURKEY XXIX:
TRIPLEUOSPERMUM SCHULTZ BIP.

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ABSTRACT. The taxonomy of the genus *Tripleurospermum* is briefly discussed, and two new species and one new variety described from Turkey: *T. corymbosum* E. Hossain, *T. baytopianum* E. Hossain, *T. rosellum* (Boiss. & Orph.) Hayek var. *album* E. Hossain.

INTRODUCTION

Tripleurospermum Schultz Bip. [cf. Ueber die Tanaceteeen, 31 (1844)] is within a complex of closely allied genera in the tribe Anthemideae of the Compositae. Many of its species in the past have been described under *Matricaria* L. and *Chamaemelum* Vis. (= *Tripleurospermum*). However, *Tripleurospermum*, as it is usually circumscribed, is tolerably distinct from its related genera. *Chamaemelum* Miller (including *Ormensis* Cass.)—a small genus of about 3 species which is often confused with *Anthemis* L.—can be separated from *Tripleurospermum* by having receptacular scales, posteriorly striate, eglandular achenes, and a saccate tube at the base of its disc flowers. *Matricaria* L., on the other hand, is distinguished by having eglandular achenes bearing five slender ribs on the anterior side. However, *M. matricarioides* (Less.) Porter ex Britton is aberrant in the inconsistent presence of oil glands on the anterior side of the achenes. In fact *Anthemis* and *Chamaemelum* hang together, so also *Matricaria* and *Tripleurospermum*: key characters are only found in their achenes.

Tripleurospermum is a herbaceous genus mainly found in open secondary habitats, e.g. in fields (usually fallow), waste places, roadsides etc. and on sea-shores of Europe and the Mediterranean area; a few species (e.g. *T. corymbosum* E. Hossain) however, grow in water-meadows (a closed habitat). On the basis of species concentration Turkey (24 species, 9 endemic), Caucasia (12 species, 5 endemic; fide Pobedimova, 1961b), and possibly further east can be considered as the centre (or centres) of its diversity.

The exact number of species in *Tripleurospermum* is impossible to determine until a thorough monographic work has been undertaken. The species as they are presently recognized are mainly based on minor differences in inflorescence, size, number and nature of capitula, presence or absence of glands at the apices of the disc flowers, corona (crown-like scaly structure at the top of the achene representing the pappus of other Compositae), and achene characters. Sometimes closely allied sympatric species are also distinguished by the nature of the leaf laciniae, and phyllary characters. To cite some examples, *T. tenuifolium* (Kit.) Freyn bears longer filiform leaf laciniae than *T. conoclinium* (Boiss. & Bal.) Hayek; *T. transcausicum* (Manden.) Pobed. possesses eglandular disc flowers in contrast to *T. callosum* (Boiss. & Heldr.) E. Hossain which has glandular ones. A distinctive feature of *T. melanolepis* (Boiss. & Buhse) Pobed. lies in its black crenulate phyllaries.

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These minor characters often correlate with those of the corona and achene, but nearly all of them break down in a species-complex like *T. oreades* (Boiss.) Rech. f.

Most *Tripleurospermum* species are closely inter-related. Species of the discoid group [e.g. *T. disciforme* (C. A. Mey.) Schultz Bip., *T. decipiens* (Fisch. & Mey.) Bornm. and *T. microcephalum* (Boiss.) Bornm.] differ from one another mainly in the nature of inflorescence, and presence or absence of a corona on the achene. That many *Tripleurospermum* species are closely related genetically has been repeatedly proved by the production of artificial hybrids (Vaarama, 1953; Löve & Löve, 1961; Hämet-Ahti, 1967; Kay, 1969 and others). Much of this cytotaxonomic work has been carried out on the *T. maritimum-inodorum* complex in Europe where various cytotypes, ecotypes and races have been recognized. A similar situation may be present in the widespread and very variable *T. oreades* of Turkey and adjacent areas.

Although artificial hybridization has been successfully achieved between a number of species in *Tripleurospermum*, natural hybrids have not yet been reported (Kay, 1969); however, as the species are so closely related, hybrids would not be easy to detect, especially in herbarium material.

It has been reported (Kay, 1969) that many species of *Tripleurospermum* are self-incompatible and therefore outcrossing. Their occurrence in widely variable climatic and edaphic conditions, and under different biotic influences, makes them capable of utilizing their genetic resources in a variety of ways. The variation they show is often in minor characters which are possibly partly obscured by phenotypic modifications. Taxonomic opinion therefore varies enormously as to what should be treated as a species in *Tripleurospermum* (this is particularly true in the species-complexes). Russian taxonomists (cf. Pobedimova, 1961) have probably gone too far in recognizing local variants as distinct taxonomic species. Further, Pobedimova (1961) in her revision of the genus *Tripleurospermum* has created many new sections and series which are grouped into two subgenera. As has already been pointed out, most species of *Tripleurospermum* are closely inter-related; therefore seems to be no justification for creating so many infrageneric taxa which may be difficult to use. Further, in the absence of correlated differences these infrageneric taxa (based mostly on single characters) are liable to be artificial. As a result, closely related species are often incorporated into different infrageneric taxa [e.g. *T. subpolare* Pobed. and *T. maritimum* (L.) W. Koch are placed into two different sections, although the former has been considered as a subspecies (cf. Hämet-Ahti, 1967)] of the latter.

On the majority of herbarium sheets mature achenes are not available. Leaf characters are of limited use in the taxonomy of *Tripleurospermum*. Leaves are usually much dissected and, when pressed, conceal their three-dimensional nature. The basal leaves often vary in the number and size of laciniae in comparison to those of the cauline leaves on the same plant. Even achenial ornamentation is variable and *T. oreades* includes smooth, tuberculate, tuberculate-rugose to rugose achenes. The surface characters may change to some extent, depending on the maturity of achenes. By and large, the taxonomy of this genus, as it stands now, seems to be unsatisfactory—possibly due to polyploidy (tetraploids are reported to occur in the *T. maritimum-inodorum* complex, cf. Hämet-Ahti, 1967; Kay, 1969, etc.), minor morphological variation, and paucity of correlated distinguishing characters.

The diverse species-concepts adopted by splitters and lumpers have added to the difficulty of revising *Tripleurospermum*.

When revising *Tripleurospermum* for the Flora of Turkey, Vol. 5 (in preparation), two endemic species and one variety were found to be still undescribed.

NEW TAXA

Tripleurospermum corymbosum E. Hossain, *sp. nov.* Affinis *T. calloso* (Boiss. & Heldr.) E. Hossain et *T. transcaucasico* (Manden.) Pobed. sed a primo phyllariis lanceolato-oblongis, lobis corollae disci eglandulosis, acheniis pallido-brunneis differt; a secundo laciniis crassis, inflorescentia dense corymbosa plus minusve umbelliformi, capitulis numerosis et pedunculis multo brevioribus recedit.

Herba biennis, erecta, usque ad 80 cm alta. *Caulis* ad basin solitarius, superne corymboso-ramosus. *Folia* 3-pinnatisecta; lacinae anguste lineari-filiformes, mucronato-aristatae, glabrae, crassae. *Inflorescentia* dense corymbosa plus minusve umbelliformis; capitula per corymbam 2-5 disposita, per plantam numerosa, radiata, 6-7 mm diam. (ligulis exclusis); pedunculi 2.5-4 cm, \pm aequales, nudiusculi vel minute bracteati. *Phyllaria* glabra, scariosa, marginibus rubello-brunnea; series externae minutae, triangulari-acutae; series internae oblongae, subobtusae. *Receptaculum* anguste conicum. *Ligulae* 5-6 mm, reflexae, lobi corollae disci ad apices eglandulosi. *Achenia* 1×0.6 mm, lineari-oblonga vel obpyramidata, non-mucilaginoso, facie anteriore tuberculata, posteriore incurvata tricostata; costae tenuissimae, acutae; corona brevis, marginiformis, albida, lobulata, ca. $\frac{1}{2}$ achenii aequans. *Fl.* 6.

Turkey. B9 Ağrı: d. Suluçem (Musun), 5 km E of Balik Gölü, 1250 m, by streams and in water meadows, 23 vii 1966, *Davis* 47067 (holo. E, iso. K).

Tripleurospermum baytopianum E. Hossain, *sp. nov.* Affinis *T. rosello* (Boiss. & Orph.) Hayek et *T. elongato* (Fisch. & Mey.) Bornm. sed a primo ligulis albidis et acheniis brevioribus angustioribus coronis marginiformibus differt; a secundo lobis corollae disci glandulosis et characteribus acheniorum facile distincta.

Herba biennis vel perennis, 20-25 cm alta. *Caulis* solitarii vel ad basin numerosi, non-ramosi vel superne raro divisi. *Folia* 2-pinnatisecta; lacinae filiformi-lanceolatae, aristatae. *Capitula* plerumque solitarii, 8-10 mm diam. (ligulis exclusis), radiata; pedunculi 2-7 cm longi, pubescentes. *Phyllaria* pubescentia scariosa marginibus pallido-brunnea; series externae dense pubescentes, oblongae vel ovato-oblongae, subobtusae; series internae oblongo-obtusae. *Receptaculum* ovato-acutum. *Ligulae* 3-5 mm longae; lobi corollae disci ad apices glandulosi. *Achenia* $0.9-1.2 \times 0.3-0.5$ mm, lineari-oblonga, mucilaginoso, pallido-brunnea, facie anteriore laevia, posteriore tricostata; costae parce crassae, albidae, acutae; fissurae profunde angustae; corona marginiformis, albida, crenulata, raro usque ad $\frac{1}{2}$ achenii aequans. *Fl.* 4.

Turkey-in-Europe. Al(E) Çanakkale: Kuru Da. between Heşan and Kadiköy, *Pinus brutia* forest, 2000 m, 27 iv 1968, *T. Baytop* 12572 (holo. E); *T. Baytop* 12557 (E).

The species is named after its discoverer Professor T. Baytop, and his wife Professor A. Baytop, both of whom have collected extensively in Turkey, and have been extremely helpful in providing information for the Flora.

Tripleurospermum rosellum (Boiss. & Orph.) Hayek var. **album** E. Hossain, var. nov.

A varietate typico laciniis magis numerosis et brevioribus, ligulis albidis recedens.

Turkey. A4 Paphlagonia: (Ankara/Kastamonu), Ilgaz Da. above Karakol (police station) between Çankari and Kastamonu, 2000–2150 m, 20 vi 1929, *Bornmüller* 14281 (holo. LD). A3 Bolu: Ala Da., Demirciler Yaylasi, an Felsen, 1330 m, 19 v 1970, *Bozakman & Fitz* 605 (W!): A4 Kastamonu: Kastambuli (Kastamonu), 3 v 1892, *Sintenis* 3840 (G!).

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